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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

PORTKA, GARY J

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 12/30/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/823,126

Applicant(s)

FANNING ET AL.

Examiner

Gary J Portka

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s). _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Claims 1, 11, and 21 have been amended by Applicant. Claims 1-30 are pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5 and 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lopez-Aguado et al., U.S. Patent 5,996,061.

4. As to claims 1 and 11, Lopez-Aguado discloses the apparatus and method including storage circuit 150 coupled to a prefetcher and storing prefetch requests as recited (see Figures 4 and 5, column 7 lines 50-59), and canceler to cancel the access request when it matches to at least P of the stored requests (see column 7 line 66 to column 8 line 8). The additional limitation that the canceler uses a gating circuit to cancel the request is inherent to the extent recited. That is, to terminate prefetching based upon the determination that an address is in the prefetch queue in Lopez-Aguado, a signal to terminate must be sent or not sent (switched) based upon a control signal (address in the queue); this is the basic definition of a gating circuit.

5. As to claims 2 and 12, Lopez-Aguado teaches the storage element is a queue of predetermined size (150).

6. As to claims 3 and 13, the queue 150 is a plurality of registers shifting the prefetch addresses to the extent claimed.

7. As to claims 4 and 14, matching circuit is inherent to determine if "the derived prefetch address is already stored within the prefetch queue 150" (column 7 lines 66-67).

8. As to claims 5 and 15, cancel generator as recited is disclosed since the derived prefetch address is discarded (column 8 line 1).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6-10 and 16-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez-Aguado et al., U.S. Patent 5,996,061, in view of Jacobs, U.S. Patent 6,134,633.

11. As to claims 6-10 and 16-20, Lopez-Aguado teaches the invention substantially as discussed above with regard to claims 1-5 and 11-15. Lopez-Aguado does not teach the specific limitation that there are a plurality of comparators to compare the prefetch address with the stored addresses, combining the comparison results, or the matching of entries with a CAM. However, in an analogous prefetching circuit Jacobs teaches a fully associative comparison with elements of the prefetch queue (see Figure 2, and column 6 line 64 to column 7 line 10); this teaching fully embodies all the limitations discussed. An artisan would have desired to use a fully associative search for the prefetch address because the parallel comparison with all elements in the storage is faster and removes any considerations as to where elements need to be placed. Thus it would have been obvious to one of ordinary skill in the art at the time of the

invention to include a plurality of comparators, combining comparison results, and/or a CAM, because it was well known that such a search in a prefetch queue is fast regardless of where elements are in the queue.

12. As to claims 21-30, the Lopez-Aguado and Jacobs combination teaches the invention substantially as described above with regard to claims 1-20. Lopez-Aguado does not teach that the storage circuit, prefetcher, and canceler are part of a chipset coupled to the processor. As shown in Figures 3 and 4, these items are disclosed as part of the CPU. However, the combination or separation of functionally equivalent parts is not generally given patentable weight. Jacobs shows a processor coupled to the equivalent chipset with prefetch resources at Figure 1 and at column 4 lines 53-62. An artisan would have been motivated to use a chipset as recited coupled to the processor instead of the integrated unit taught by Lopez-Aguado, because these parts might be more readily available, or might already be partly implemented in an existing system, thus saving cost and/or time. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the storage circuit, prefetcher, and canceler in a chipset coupled to the processor, because this might save time and cost by using readily available or existing parts.

Response to Arguments

13. Applicant's arguments filed December 9, 2003 have been fully considered but they are not persuasive.

14. Applicants argue that a process that needs to be terminated based on the presence of a variable in storage does not inherently require a gating circuit. Examiner disagrees and suggests that Applicant is attempting to read limitations into the claim that do not exist; as stated

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previously a circuit which passes or does not pass a signal (to terminate) based upon a control input (based on the proper address), is required to achieve the termination of prefetching based upon an address being found in the queue. Examiner disputes that all prior arguments were not addressed. The statement that "Lopez-Aguado merely discloses a derived prefetch address, not a prefetch address", is not understood, since a derived prefetch address is a prefetch address. Also as previously argued, since it is determined if the derived prefetch address is already in the queue, it is determined if it matches at least P addresses in the queue to the extent these limitations are claimed.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary J Portka whose telephone number is (703) 305-4033. The examiner can normally be reached on M-F 9:30 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

Gary J Portka
Primary Examiner
Art Unit 2188



December 29, 2003